

CLAIMS

1. A method of tracing signalling messages of a subscriber in a mobile communication system which comprises functional entities for subscriber mobility management, the method comprising

transmitting and receiving signalling messages in a functional entity,
characterized by

receiving a trace command (3-1) in said functional entity, the command indicating the tracer and identifying at least one subscriber whose signalling messages are to be traced,

starting tracing which comprises the steps of:

copying a signalling message in response to the reception or transmission (405) of a signalling message related to the subscriber to be traced, and

sending a copy to the tracer (460, 3-2').

2. A method according to claim 1, **characterized** in that the trace command also indicates the type of the signalling message to be traced, and

the signalling message is copied only if it is of the type (404) to be traced.

3. A method according to claim 1 or 2, **characterized** in that tracing starts from the start message (401) of a dialogue related to the subscriber to be traced.

4. A method according to claim 3, **characterized** in that tracing of the subscriber's signalling message stops in response to the fact that the dialogue which started tracing ends.

5. A method according to claim 1, 2 or 3, **characterized** by receiving a stop command (3-3) of tracing in the entity, the command indicating the subscriber whose signalling message tracing is to be stopped, and

stopping tracing of the signalling messages related to said subscriber.

6. A method according to ^{claim 1} ~~any one of the preceding claims~~, **characterized** in that the signalling messages of the MAP protocol are traced.

7. A mobile communication system comprising

subscribers (MS), at least some of the subscribers being able to roam within the coverage area of the system,

one or more network elements (MSC, VLR, HLR) in which signalling messages are received and transmitted to manage subscriber mobility,

5 operating means (OMC) for giving instructions to the network element,

characterized in that

the operating means (OMC) are arranged to give a trace command to the network element (MSC, VLR, HLR), the command indicating the tracer and identifying at least one subscriber (MS) whose signalling messages are to be traced,

the network element (MSC, VLR, HLR) is arranged to copy signalling messages related to the subscriber (MS) in response to the trace command and to send a copy to the tracer.

15 8. A system according to claim 7, **characterized** in that

the trace command also indicates the type of the signalling message to be traced, and

the network element (MSC, VLR, HLR) is arranged to copy the signalling message related to the subscriber to be traced if it is of the type to be traced.

20 9. A system according to claim 7 or 8, **characterized** in that the signalling messages to be traced are messages of the MAP protocol, and

the network element (MSC, VLR, HLR) is arranged to start copying of the signalling messages related to the subscriber in response to the dialogue of the MAP protocol which starts after the trace command and is related to the subscriber to be traced.

25 10. A network element (NE) of a mobile communication system which receives and transmits signalling messages to manage subscriber mobility, **characterized** in that the network element comprises

30 reception means (OMU) for receiving a trace command, which indicates the tracer and identifies at least one subscriber whose signalling messages are to be traced,

separation means (ME) for separating the signalling messages of the subscriber to be traced from other signalling messages,

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copying means (ME) for copying the signalling messages related to the subscriber to be traced, and

transmission means (ME, OMU) for sending copies to the tracer.

5 in that

the trace command also indicates the type of the dialogue to be traced, and

10 the separation means (ME) are arranged to separate the signalling messages that belong to the dialogue of the type to be traced from the signalling messages of the subscriber to be traced.

12. A network element according to claim 10 or ~~11~~,
characterized in that the network element (NE) comprises an MAP entity (ME) which is responsive to the reception means and comprises separation, copying and transmission means.

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